

Arizona State Library, Archives and Public Records



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STANDARDS FOR PERMANENT RECORDS MEDIA AND STORAGE

(This standard replaces all versions of the prior standard dated August 7, 1985. Records produced, reproduced and/or preserved in good faith under prior versions of this standard do not require to be brought under this standard.)

1. **Scope:** This standard is established by the Director, Arizona State Library, Archives and Public Records pursuant to A.R.S. §39-101. It is published by the Arizona State Library, Archives and Public Records, an agency of the Arizona State Legislature.

Permanent preservation refers to those standards required to maintain records in perpetuity with an expected life of 500 or more years. Long term preservation refers to those standards necessary to assure no more than 100 years of expected life.

Permanent standards are necessary for those public records required by law to be permanent or those records determined by the Department of Library, Archives and Public Records to possess archival or historical value.

2. **Authority:** This standard is approved pursuant to Arizona Revised Statutes §§39-101, 41-1345, 41-1346, 41-1347, 41-1348, 41-1349, 13-2407.

GladysAnn Wells
Director, Arizona State Library, Archives & Public Records

August 9, 2000
Effective Date

3. Responsibility:

- A. Public officials and other custodians of public records: To preserve and protect permanent public records in accordance with these standards and to maintain documentation as evidence that these standards are being met.
- B. Arizona State Library, Archives and Public Records: To periodically monitor and audit these standards.

4. Requirements:

NOTE: Only human readable media are being considered for permanence. See specific ANSI standard for requirements of permanent records.

ANSI – American National Standards Institute

AIIM – Association for Information and Imaging Management

NAPM – National Association of Photographic Manufacturers

A. Permanent Micrographics (LE-500)

(ANSI/AIIM MS48-1990)

- (1) Film must be conventional silver halide type manufactured for use as microfilm. It must have a safety base of polyester. (ANSI/NAPM IT9.1-1996).
- (2) Processing must be accomplished using a processor which provides a separate fixing stage and washes the film thoroughly following fixing. Processed film must have no more than 1.4 micrograms per square centimeter of residual thiosulfate (fix) remaining on the film. This must be documented through regular testing of the processing operation using the methylene-blue method. When using a commercial lab for processing, the testing is performed not less than once per week and that the testing indicates that the film falls within the tolerable range of the test. If the film does not meet the standard it must be rewashed and retested within 14 days of initial processing. (ANSI/NAPM IT9.1-1996).
- (3) Storage containers must be non-corroding, coated metal cans or peroxide free plastic boxes containing one roll of film. Film must be wound tightly but not under tension onto plastic reels. Pressure sensitive tape or labels must not be in contact with the film. Other foreign materials (e.g. paper strips, rubber bands, other types of film, etc.) must never be placed in the containers with the film.(ANSI IT9.2-1991)
- (4) Polyester jackets may be used for unitized records if all other requirements for film and storage are met and carbon ribbon is used for indexing. Paper aperture cards or "Tab-Jacs" may not be used.
- (5) Storage area must be secure and fire protected. It must also be free of steam or water sources including drains, except that any sprinkler or humidifier plumbing must have a shut-off valve located outside the storage area.

- (6) Silver halide film must be stored only with like materials within a given storage unit (e.g. storage cabinet, storage box, etc.).
- (7) Film must be stored at least three inches above the floor of the storage area.
- (8) Storage units (e.g. storage cabinet, storage box, etc.) must be the non-insulated type made of metal, peroxide free plastic, or corrugated paper meeting the requirements in this standard for alkaline buffered papers. Particle board, wood and standard corrugated paper units must not be used.
- (9) Storage area environment must be maintained with minimal fluctuation (temperature $\pm 5^{\circ}\text{F}$; relative humidity $\pm 6\%$):

Temperature: 70°F (21°C) maximum,
32°F (0°C) minimum
Relative Humidity: 40% maximum,
20% minimum.
(ANSI MS23-1998)
- (10) Storage area must be kept clean and relatively dust free. Frequent dusting and vacuum cleaning is advised. Area must be free of rodents, insects and active fungi.
- (11) Handling of film must be minimal and limited to producing duplicate working or scanned copies. Film should be handled at edges only and hands should be covered with soft clean cloth gloves.

B. Long-term Micrographics (LE-100)

NOTE: These types are not suitable for permanent records.

- (1) The following film types are considered long-term if storage and handling requirements are met:
 - (a) Dry Silver (TPS) Microfilms
 - (b) Electrostatic (electrophotographic) Microfilms
 - (c) Thermal Deformation (photo plastic) Microfilms
 - (d) Monobath processed Silver Halide Microfilms
 - (e) Diazo Duplicate Microfilms
 - (f) Vesicular Duplicate Microfilms
 - (g) Silver Halide on cellulose ester base
- (2) Storage and handling conditions must conform to the requirement for permanent conventional silver halide microfilm 4. A. (3) through (11) above.

C. Quality Control Standards for both Permanent and Long-term Microforms.
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(1) Resolution (minimum acceptable)
Minimum quality index level of 8

(a)	16mm Rotary Camera	90 lines/mm
(b)	16mm Planetary Camera	125 lines/mm
(c)	35mm Planetary Camera at 24:1	120 lines/mm
(d)	35mm Planetary Camera at 30:1	135 lines/mm

(2) Density (image density)
(Table 1.)

(a)	Background	0.70 to 1.50
(b)	Base + Fog	0.00 to 0.16

Background Densities

Classification	Description of documents	Density
Group 1	High quality, high contrast printed books, periodicals, and black typing.	1.30-1.50
Group 2	Fine line originals, black opaque pencil writing, and documents with small, high contrast printing	1.15-1.40
Group 3	Pencil and ink drawings faded printing, and very small printing such as footnotes at the bottom of a page.	1.00-1.20
Group 4	Low-contrast manuscripts and drawings; graph paper with pale, fine-colored lines; letters typed with a worn ribbon; and poorly printed, faint documents.	0.80-1.00
Group 5	Poor-contrast documents may require a lower background density. (i.e. Photostats or blueprints etc.)	0.70-0.85
The base-plus-fog density of unexposed, processed, clear based film must not exceed 0.10. When tinted base film is used, the density will increase by 0.10 or 0.20 which must be added to the 0.10 value.		

ANSI/AIIM MS48-1990

- (3)** Microforms must be virtually an exact representation of original documents following inspection, re-filming and splicing of appendix. Container indexing must adequately represent the contents of the film.
- (4)** Only sonic weld splices are acceptable.
- (5) All Microforms shall be certified as meeting the requirements for Permanent records .**
- (6)** Annually, all permanent and long term micrographics holdings shall be inspected by the records custodian. A minimum 1% random sample representative of all holdings must be taken and inspected for:
- (a) Golden or reddish color blemishes (redox)

- (b) Faded images
- (c) Discoloration of film base or images
- (d) Broken or damaged splice welds
- (e) Other deterioration

(7) Any problems noted due to the inspection shall be reported to the Preservation Imaging Operation, Arizona State Library, Archives and Public Records.

D. Permanent Paper

(All papers used for permanent records shall conform to the most recent version of ANSI/NISO Z39.48.)

- (1) The fiber content shall be cotton or linen, fully bleached wood pulp, or a mixture. The paper shall be free of lignin, unbleached wood pulp or ground wood.
- (2) The pH shall be from 7.5 to 9.5.
- (3) The paper shall contain a minimum of 2%, by weight, of calcium or magnesium carbonate, or both as an alkaline reserve.
- (4) The paper shall be internally and surface sized with a neutral or alkaline agent.
- (5) Paper weight shall be 16 lbs. (60g/M²), 20 lbs. (75g/M²), 24 lbs. (90g/M²) or 32 lbs. (120g/M²).
- (6) File folders for storage of permanent records shall conform to the same standards as above 1 through 4 but shall have a minimum thickness of .010 inches (.254 mm).

E. Storage Containers for Permanent Paper Records

- (1) File cabinets shall be constructed of steel with a smooth, baked enamel or powder-coated finish.
- (2) Non-corrugated document boxes shall conform to permanent paper standards 4. D. 1 through 4 and shall be of a weight and thickness to assure adequate protection of the enclosed records.
- (3) Corrugated Document Boxes:
 - (a) The paper plies shall be free of lignin, ground wood and unbleached wood pulp.
 - (b) The pH of the interior lining paper shall be from 7.0 to 9.5.

- (c) The interior lining paper shall contain a minimum of 2%, by weight, of calcium or magnesium carbonate, or both as an alkaline reserve.
- (d) All adhesives shall be formulated to prevent acid migration to the interior of the box.
- (e) The paper shall be internally and surface sized with a neutral or alkaline agent.

F. Storage Environment for Permanent Paper Records

NOTE: The stability of the environment is, within reason, more important than specific numbers. For example, a stable temperature, maintained constantly at 75°F, is preferable to one that fluctuates from 65° to 75°F. The same is true of relative humidity.

- (1) Storage Environment must be maintained with minimal fluctuation (temperature $\pm 5^{\circ}\text{F}$; relative humidity $\pm 6\%$)

Temperature: 75°F (22°C) maximum, 60°F (16°C) minimum

Relative Humidity: 60% maximum, 30% minimum

NOTE: Ideal temperature variation is no more than $\pm 2^{\circ}\text{F}$; Ideal Humidity variation is no more than $\pm 2\%$.

- (2) Ultraviolet radiation from either sunlight or fluorescent lighting shall be kept at minimum by the use of window shades or paint, ultraviolet filters, the use of lights only during retrieval or filing, or a combination of such methods. Incandescent lighting used only during retrieval or refiling is preferred.
- (3) Air circulation shall be adequate to prevent stagnant air. Incoming air shall be filtered, mechanical filtration through fiberglass filters being the minimum acceptable. Electro-static filters shall not be used. Filters will be serviced at recommended intervals.
- (4) The storage area shall be free of rodents, insects and active fungi.
- (5) Storage area must be secure and fire protected. It must also be free of steam or water sources including drains except that any sprinkler or humidifier plumbing must have a shut-off valve located outside the storage area.
- (6) Annually, all permanent paper records shall be inspected by the records custodian. A minimum 1% random sample representative of all holdings must be taken and inspected for:
 - (a) Water damage
 - (b) Infestation by insects or fungus
 - (c) Discoloration, brittleness, etc.